The opinion in support of the decision being entered today was ***not*** written for publication and is ***not*** binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Ex parte HANS WESTMIJZE and BOEN HO O

Appeal No. 2006-1412
Application 09/889,436

ON BRIEF

Before GARRIS, PAK and WARREN, *Administrative Patent Judges*.

WARREN, *Administrative Patent Judge*.

Decision on Appeal

This is an appeal under 35 U.S.C. § 134 from the decision of the examiner finally rejecting claims 16 through 29, all of the claims in the application.

Claim 16 illustrates appellants' invention of an aqueous peroxide emulsion, and is representative of the claims on appeal:

16. An aqueous peroxide emulsion, comprising a peroxide and optionally containing anti-freeze and/or further additives, which contains a specific emulsion system which consists essentially of a copolymer of an α,β-unsaturated dicarboxylic acid and a C_{8-24} α-olefin the acid groups of which are esterified with an ethoxylated alcohol having a degree of ethoxylation of 1-45, characterized in that the emulsifier system further comprises an ethoxylated fatty alcohol with an HLB-value greater than 16.

The references relied on by the examiner are:

Lundin et al. (Lundin '250)	4,499,250	Feb. 12, 1985
Lundin et al. (Lundin '481)	5,547,481	Oct. 15, 1985

Torenbeek et al. (Torenbeek) (published European Patent Application)	0 492 712	July 1, 1992
Boen Ho O (Boen Ho O) (published World Intellectual Property Organization Application)	WO 98/18835	May 7, 1998

The examiner has rejected appealed claims 16 through 29 under 35 U.S.C. § 103(a) as being unpatentable over Torenbeek in combination with Boen Ho O, Lundin '250 or Lundin '481 (answer, pages 3-6).[1,2]

Appellants state that the appealed claims "stand or fall together" (brief, page 2).[3] Thus, we decide this appeal based on independent claim 16. 37 CFR § 1.192(c)(7) (2003); *see also* 37 CFR § 41.37(c)(1)(vii) (September 2004).

We affirm.

We refer to the answer and to the brief and reply brief for a complete exposition of the positions advanced by the examiner and appellants.

Opinion

We have carefully reviewed the record on this appeal and based thereon find ourselves in agreement with the supported position advanced by the examiner that, *prima facie*, the claimed aqueous peroxide emulsion encompassed by claim 16 would have been obvious over the combined teachings of Torenbeek, Boen Ho O, Lundin '250 and Lundin '481 to one of ordinary skill in this art at the time the claimed invention was made. Accordingly, since a *prima facie* case of obviousness has been established by the examiner, we again evaluate all of the evidence of obviousness and nonobviousness based on the record as a whole, giving due consideration to the weight of appellants' arguments in the brief and reply brief. *See generally, In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992); *In re Piasecki*, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984).

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[1] The examiner withdrew the ground of rejection under 35 U.S.C. § 112, second paragraph (answer, page 6).

[2] The examiner withdrew United States Patent 4,734,135 to Satomi et al. as cumulative to the references relied on (answer, page 7). Thus, we do not consider appellants' contentions with respect to this document (reply brief, page 5).

[3] We consider the brief filed July 7, 2003, and the reply brief filed February 25, 2005.

We agree with the examiner's findings of fact from the references and conclusions of law based on this substantial evidence as set forth in the answer, to which we add the following for emphasis.

Our review of the examiner's application of prior art to claim 16 requires that we interpret the claim by giving the terms thereof the broadest reasonable interpretation in their ordinary usage in context as they would be understood by one of ordinary skill in the art in light of the written description in the specification unless another meaning is intended by appellants as established therein, and without reading into the claim any disclosed limitation or particular embodiment. *See, e.g., In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364, 70 USPQ2d 1827, 1830 (Fed. Cir. 2004); *In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997); *In re Zletz*, 893 F.2d 319, 321-22, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989).

The plain language of claim 16 specifies any aqueous peroxide emulsion composition comprising at least any manner and amount, however small, of peroxide which can form an emulsion, "optionally containing" any manner and amount, however small, of anti-freeze and any manner and amount, however small, of "further additives," and "contains" any amount, however small, of "a specific emulsifier system." Indeed, the open-ended terms "comprising," "containing" and "contains" used in transition and in the body of the claim open the claim to encompass aqueous peroxide emulsion compositions that contain any manner and amount of additional ingredients. *See generally, Exxon Chem. Pats., Inc. v. Lubrizol Corp.*, 64 F.3d 1553, 1555, 35 USPQ2d 1801, 1802 (Fed. Cir. 1995) ("The claimed composition is defined as comprising - meaning containing at least - five specific ingredients."); *In re Baxter*, 656 F.2d 679, 686-87, 210 USPQ 795, 802-03 (CCPA 1981) ("As long as one of the monomers in the reaction is propylene, any other monomer may be present, because the term 'comprises' permits the *inclusion* of other steps, elements, or materials."). Indeed, appellants disclose in the written description in the specification that any ingredient that disrupts "the hydrogen bridging structure of freezing water" can be used as the antifreeze, and that any "additives as typically used when making emulsions of peroxides may be incorporated into the emulsion" (pages 6 and 8).

The required "a specific emulsion system . . . consists essentially of" any manner of the specified esterified copolymer and is further "characterized in that the emulsifier system further

comprises an ethoxylated fatty alcohol with an HLB-value greater than 16."[4] The term "consisting essentially of" is used in claim construction to indicate that "the invention necessarily includes the listed ingredients and is open to unlisted ingredients that do not materially affect the basic and novel properties of the invention." *PPG Indus., Inc. v. Guardian Indus. Corp.*, 156 F.3d 1351, 1354, 48 USPQ2d 1351, 1353-54 (Fed. Cir. 1998). The interpretation of this transitional term requires a determination of whether the inclusion in the claimed compositions of additional element(s) in the amount(s) taught in the applied prior art would materially affect the basic and novel characteristics of the claimed composition because this phrase customarily excludes such materials. *See In re Herz*, 537 F.2d 549, 551, 190 USPQ 461, 463 (CCPA 1976) (explaining *Ex parte Davis*, 80 USPQ 448 (Pat. Off. Bd. App. 1948)). In arriving at this determination, the written description in appellants' specification must be considered. *Herz*, 537 F.2d at 551, 190 USPQ at 463 ("[I]t is necessary and proper to determine whether [the] specification reasonably supports a construction" that would exclude or include particular ingredients.); *see also PPG Indus.*, 156 F.3d at 1354-57, 48 USPQ2d at 1353-56 (Patentees "could have defined the scope of the phrase 'consisting essentially of' for purposes of its patent by making clear in its specification what it regarded as constituting a material change in the basic and novel characteristics of the invention. The question for our decision is whether PPG did so."). We pointed out above that the term "comprising" opens appealed claim 16 to compositions that include any manner of ingredients in addition to those listed. We determine that the language "the emulsifier system further comprises" would ordinarily open the "emulsifier system" to additional ingredients, thus obfuscating the affect of the term "consisting essentially of."

In any event, our review of the written description in the specification reveals no teachings of additional elements that materially affect the basic and allegedly novel characteristics of the claimed peroxide emulsion compositions encompassed by claim 16 (*cf.* specification, page 5, ll. 22-30), which is disclosed to "be used in various polymerization

[4] The "HLB value" is the hydrophilic-lipophilic balance for emulsifiers and is a "generally accepted standard." *See, e.g.*, specification, page 4, l. 29, to page 5, l. 1; Ho O, page 9, ll. 4-6; and Lundin '250, col. 2, ll. 32-35.

reactions" (*id.*, page 8, ll. 13-22). Thus, it is appellants' burden to establish that ingredients contained by peroxide compositions of the applied references which are not specified in appealed claim 16 would be deleterious to the basic and allegedly novel characteristics of the compositions falling within the claim, and thus excluded from the claim by use of the transitional term "consisting essentially of." *See PPG Indus., supra; Herz, supra.* In this case, the burden is increased because the "specific emulsion system" as claimed is open to additional unspecified ingredients as we pointed out above.

We agree with the examiner that claim 16 does not exclude the additional ingredients found in the applied references for the reasons we set forth below (answer, page 6). We are not convinced otherwise by appellants' arguments in addressing this issue that polyether siloxane is excluded. This is because appellants have not cited to such disclosure in the written description in the specification (reply brief, page 4), and we find none. We note appellants' admission that polyvinyl alcohol is not excluded (*id.*), but do not agree that this is because it is not an emulsifier. Rather, polyvinyl alcohol is an additional ingredient permitted by the claim language "comprising . . . other additives" and "emulsifier system further comprises" as indeed it is shown to be typically used in such compositions in the applied references.

Turning now to the issue of what the applied references would have disclosed to one of ordinary skill in this art as a matter of fact, we agree with the examiner that, contrary to appellants' contentions (brief, pages 3-4; reply brief, pages 1-2), there is no requirement in Torenbeek that the compositions must contain a polysiloxane (answer, pages 5-6). Indeed, in addition to reference page 3, ll. 33-36, cited by the examiner (*id.*), Torenbeek would have clearly disclosed that a polyether polysiloxane copolymer is an alternative dispersing agent to the specified esterified copolymer, and indeed, these separate dispersing agents are separately illustrated in Examples 7-9 and Examples 1-6, respectively (page 2, ll. 53-58, pages 6-7 and page 7). In any event, the combination of an esterified copolymer and a polyether polysiloxane copolymer also taught by the reference is not excluded by the language of claim 16 as we have interpreted this claim above.

With respect to the *prima facie* case of obviousness established by the examiner, appellants submit that one of ordinary skill in this art would not have been led to combine the

teachings of the applied references on the basis that in order to arrive at the claimed compositions, this person would have to "leave out" from the prior art peroxide emulsion composition the polysiloxane copolymer of Torenbeek and the polyvinyl alcohol of Boen Ho O; would have had to overlook the disclosure in Boen Ho O that the "composition" described in Torenbeek resulted in "an unacceptable formulation of polyvinyl chloride;" and would have had to select from Lundin '250[5] the ethoxylated fatty alcohol even though the reference "teaches a person that ethoxylated fatty acids are preferred over ethoxylated fatty alcohols," citing the disclosure at col. 3, ll. 42-44, "thereby making the choice for an emulsion with ethoxylated fatty alcohols less obvious" (brief, pages 3-5). Thus, appellants would have us conclude that the combined references would not have led one of ordinary skill in this art to the claimed aqueous peroxide emulsions as specified in claim 16 (*id.*, page 5).

The examiner maintains her position on the basis of the arguments with respect to the teachings of Torenbeek and claim language that we considered above, and additionally points out that Lundin '250 presents one of ordinary skill in this art with only two choices for the ethoxylated fatty compound and further illustrates an ethoxylated fatty alcohol with an HLB of 16.5 in Example 5 (answer, pages 5-6).

Appellants reply that the combination of Torenbeek and Boen Ho O would have led to replacing "the emulsifying system of [Torenbeek] by that of [Boen Ho O], thereby arriving at a composition having the ethoxylated fatty acid as the only emulsifier" which is not encompassed by claim 16 (reply brief, page 2). Appellants submit in this respect that Boen Ho O stabilizes "a suspension rather than an emulsion," contending that "[a] suspension is a liquid containing very small solid particles that remain suspended (i.e. are floating) in the liquid, as opposed to an emulsion which consists of small liquid droplets that are suspended into another liquid" and thus, "[i]t should be clear that, physically, these systems are completely different" (*id.*). Appellants further contend that "electrostatic, steric and electrosteric forces play an important role in suspension stabilization to prevent settling of solid particles . . . whereas . . . emulsifiers are used to control the stability of emulsions" (*id.*, page 3). On this basis, appellants further submit that

[5] We agree with appellants that the disclosures of the Lundin references are in fact the same (brief, page 4) and thus, we consider only Lundin '250.

"there is no sound reason to believe that systems that are suitable for keeping solid particles free floating in a liquid would also be suitable for keeping liquids free floating in another liquid" (*id.*).

On this record, we cannot subscribe to appellants' position. We find that Torenbeek would have disclosed to one of ordinary skill in this art "a dispersing agent" which can be the claimed esterified copolymer as we found above, for "polymerization-initiating dispersions of organic peroxy compounds," wherein "[b]y *dispersion* . . . is meant either an *aqueous suspension* of the peroxide or a *water-containing emulsion* of the peroxide" (page 3, ll. 16-18; emphasis supplied). Torenbeek would have taught without specifying either system, that the "dispersing agent" can include, among other additives, "polyvinyl alcohols," and that the "mixed dispersant systems can . . . give improvements in polymer morphology, composition viscosity and other properties" in vinyl chloride polymerization" (page 4, ll. 10-18). Indeed, Torenbeek would have disclosed that the dispersing agent "provides a physically stable, low viscosity, peroxide dispersion with a small average particle or droplet size and a good particle or droplet size distribution, which can be used in vinyl chloride polymerizations without detrimentally effecting the electrically properties of the polymer" and "in some cases actually improve properties such as fish eye-level and morphology" (page 4, ll. 19-26). Torenbeek would have further disclosed that "standard additives may be used in the dispersions of the present invention" including "surfactants" (page 4, ll. 37-38). Torenbeek would have still further disclosed that "[t]he polymerization of the present invention is typically a *suspension* polymerization process" involving "an *aqueous dispersion* of vinyl chloride monomer" using the peroxide initiator under "conventional conditions," such as the method of United States Patent 3,825,509, in which the polyvinyl chloride-containing polymers prepared "exhibit different properties than other polyvinyl chloride-containing polymers including better electrical properties, lower fish eye level and, in some instances, improved polymer morphology" (page 5, ll. 32-53; emphasis supplied).

We find that Boen Ho O would have disclosed that "the ingredients of the *suspensions* [of Torenbeek] are not fully compatible with the polymerization process" and can "have an effect on the polymer morphology, for instance porosity, the electrical properties of the polymer and the fish eye level" (e.g., page 3, ll. 19-25, and page 4, ll. 3-10; emphasis supplied). Boen Ho O would have taught that *aqueous suspensions* comprising polyvinyl alcohols and "one or more

emulsifiers having an average HLB value from 14.5 to 20.0," wherein the particle size of the solid peroxide compound is "very small" and the emulsifiers can preferably be fatty alcohol emulsifiers which fall in the preferred HLB value range of 16.9 to 20.0 (e.g., page 5, ll. 9-24, page 9, ll. 1-17; emphasis supplied). Boen Ho O would have further taught that the emulsifier containing *suspensions* are useful in *suspension* polymerization of aqueous dispersions of vinyl chloride monomer using the peroxide initiator under "conventional conditions," such as the method of United States Patent 3,825,509, in which the polyvinyl chloride-containing polymers prepared "exhibit desirable properties, including better electrical properties lower fish eye level and, in some instances, improved polymer morphology" (e.g., page 14, l. 16, to page 15, l. 22).

We find that Lundin '250 would have acknowledged to one of ordinary skill in this art that in the method of *suspension* polymerization of vinyl chloride in United States Patent 3,825,509, "the initiator is charged in the form of an *emulsion*" in which the emulsifier can be, among others, polyvinyl alcohol, and that dispersions of solid peroxides are used with emulsifier systems (col. 1, ll. 44-52; emphasis supplied). Lundin '250 would have taught a *suspension* polymerization process for vinyl chloride with solid peroxide initiator dispersions which contain an ethoxylated nonionic emulsifier with an HLB value above 15, and preferably in the range of 17-25, in which the preferred emulsifiers are ethoxylated fatty alcohols and fatty acids, with the latter the most preferred, and without "any appreciable negative effects on the electric insulation property of the produced" product (e.g., col. 2, l. 13, to col. 3, l. 50; Example 5 and Example 6, dispersion "(b)" and table).

We determine that the combined teachings of the references as a whole would have disclosed to one of ordinary skill in this art that suspensions of solid peroxide initiators and emulsions of liquid peroxide initiators can be used as dispersions in the same processes of suspension polymerization of vinyl chloride, with the selection of other ingredients, such as the emulsifiers polyvinyl alcohol and an ethoxylated fatty alcohol or acid, being based on the performance of the dispersion of the peroxide initiator and the same properties of the resulting polyvinyl chloride-containing polymer. Thus, the same and similar teachings of the same and similar aqueous polymerization initiator dispersions for the same and similar aqueous suspension polymerization of vinyl chloride to obtain the same and similar vinyl chloride containing polymer

having the same and similar properties would have motivated one of ordinary skill in this art to combine the teachings of the applied references. The combined teachings of the references would have reasonably led this person to select an ethoxylated fatty alcohol having an HLB value in the range of greater than 16 for use in the initiator dispersions of Torenbeek, including the aqueous emulsion dispersions, in the reasonable expectation of using the dispersion in the aqueous suspension polymerization of vinyl chloride in order to obtain a polyvinyl chloride-containing polymer having desirable properties as suggested by Boen Ho O and Lundin '250. Indeed, we find it convincing that ethoxylated fatty alcohols having a HLB balance in the common claimed and prior art ranges are known in this art as *emulsifiers* for use in these aqueous suspension polymerization processes in the same manner as polyvinyl alcohols which are taught by Torenbeek for use with emulsion *and* suspension aqueous peroxide dispersions. It also cannot be fairly argued that one of ordinary skill in this art would not have reasonably selected the preferred ethoxylated fatty alcohols over the to some extent more preferred ethoxylated fatty acids, and particularly in light of the preference for the former by Boen Ho O.

Accordingly, we find substantial evidence in the record in support of the examiner's position, as indeed, one of ordinary skill in this art routinely following the combined teachings of Torenbeek, Boen Ho O and the Lundin references would have reasonably arrived at the claimed aqueous peroxide emulsion compositions encompassed by claim 16, including each and every limitation thereof arranged as required therein, without recourse to appellants' specification. *See generally, In re Kahn*, 441 F.3d 977, 985-88, 78 USPQ2d 1329, 1334-37 (Fed. Cir. 2006); *Merck & Co., Inc. v. Biocraft Labs., Inc.*, 874 F.2d 804, 807, 10 USPQ2d 1843, 1845-46 (Fed. Cir. 1989) ("That the '813 patent discloses a multitude of effective combinations does not render any particular formulation less obvious. This is especially true because the claimed composition is used for the identical purpose. [Citations omitted.]"); *In re Dow Chem. Co.*, 837 F.2d 469, 473, 5 USPQ2d 1529, 1531 (Fed. Cir. 1988) ("The consistent criterion for determination of obviousness is whether the prior art would have suggested to one of ordinary skill in the art that [the claimed process] should be carried out and would have a reasonable likelihood of success viewed in light of the prior art. [Citations omitted] Both the suggestion and the expectation of success must be founded in the prior art, not in the applicant's disclosure."); *In re Kerkhoven*,

626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980) ("It is *prima facie* obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition which is to be used for the very same purpose. *In re Susi*, . . . 440 F.2d 442, 445, 169 USPQ 423, 426 ([CCPA] 1971); *In re Crockett*, . . . 279 F.2d 274, 276-77, 126 USPQ 186, 188 ([CCPA] 1960). As this court explained in Crockett, the idea of combining them flows logically from their having been individually taught in the prior art."); *In re Keller*, 642 F.2d 413, 425, 208 USPQ 871, 881-82 (CCPA 1981)("The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art."); *see also In re O'Farrell*, 853 F.2d 894, 903-04, 7 USPQ2d 1673, 1680-81 (Fed. Cir. 1988) ("Obviousness does not require absolute predictability of success. . . . There is always at least a possibility of unexpected results, that would then provide an objective basis for showing the invention, although apparently obvious, was in law nonobvious. [Citations omitted.] For obviousness under § 103, all that is required is a reasonable expectation of success. [Citations omitted.]").

Accordingly, based on our consideration of the totality of the record before us, we have weighed the evidence of obviousness found in the combined teachings of the applied prior art as a whole with appellants' countervailing evidence of and argument for nonobviousness and conclude that the claimed invention encompassed by appealed claims 26 through 29 would have been obvious as a matter of law under 35 U.S.C. § 103(a).

The examiner's decision is affirmed.

Other Issues

The examiner should separately consider the patentability of product claim 26, drawn in product-by-process format, in the event of further prosecution of the appealed claims subsequent to the disposition of this appeal. The determination of the patentability of a product claim entails different considerations than the patentability of a process claim. *See generally, In re Thorpe*, 777 F.2d 695, 697, 227 USPQ 964, 966 (Fed. Cir. 1985); *In re Wertheim*, 541 F.2d 257, 271, 191 USPQ 90, 103-04 (CCPA 1976) ("These claims are cast in product-by-process form.

Although appellants argue, successfully we have found, that the [reference] disclosure does not suggest . . . appellants' process, the patentability of the products defined by the claims, rather than the processes for making them, is what we must gauge in light of the prior art.").

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a)(1)(iv) (2005).

AFFIRMED

BRADLEY R. GARRIS)
Administrative Patent Judge)
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CHUNG K. PAK) BOARD OF PATENT
Administrative Patent Judge) APPEALS AND
) INTERFERENCES
)
)
CHARLES F. WARREN)
Administrative Patent Judge)

Richard P. Fennelly
Akzo Nobel Inc
7 Livingstone Avenue
Dobbs Ferry, NY 10522-3408